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Respiratory disease in finishers – comparisons of diagnostic tools

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Introduction

Respiratory disease in pigs is a worldwide economic problem due to increased mortality, decreased growth rate, increased feed intake, costs for vaccines and antibiotics and increased work load (1, 3).

The disease has been termed Porcine Respiratory Disease Complex (PRDC) and is caused by a complex interplay between the animal, environmental factors and multiple pathogens of which Mycoplasma hyopneumoniae (M hyo), Porcine Circovirus 2 (PCV2), Porcine Reproductive and Respiratory Syndrome Virus (PRRSV), Actinobacillus pleuropneumoniae (APP) and Swine Influenza Virus (SIV) play the major role in Denmark.

To apply the most appropriate measures to control, prevent and treat the disease, it is essential to identify the pathogens circulating in a given herd. The aim of this study was to investigate the correlation between post mortem findings at slaughter, clinical symptoms and the detection of respiratory pathogens using oral fluids (OF) and serology.

Materials and Methods

In 4 Danish herds (table 1), 8 batches of pigs were sampled every 2 weeks during the finishing period for OF, and at each sampling, a clinical index of cough (CI) was measured by the standards set by (2). Just before slaughter of each batch, 20 blood samples were obtained by random selection, and 20 pigs were randomly selected for post mortem examination.

OF was analyzed by PCR for detection of SIV, PRRSV, PCV2 and M hyo. Blood samples were analyzed for antibodies against M hyo using ELISA (National Veterinary Institute, Frederiksberg, Denmark). Statistical analysis was carried out using Microsoft Excel, with p=0.05 set as level of significance.

Table 1.Survey of the herds included in the study. For each herd, 2 batches were included.

ID	Type [a]	Pigs/ batch	% mort	ADG [b]	FCR [c]	Vac-cines
A	FF	180	2.8	861	3.21	Mhyo
B	FF	200	3.4	983	2.94	Mhyo
C	FIN	304	2.0	891	2.77	PCV2
D1	FIN	350	1.6	910	2.60	None
D2	FIN	250	1.7	958	2.58	None
Mean value Denmark			3.6	905	2.78	

[a] FF: Farrow to Finish, FIN Finishing herd. [b] Average Daily Gain (g/day). [C] Feed Conversion Rate, FE/kg gain

Results

There was a significant correlation (P=0.033) between number of M hyo antibody positive pigs at slaughter and peak index of cough during the finishing period, but a significant negative correlation (P=0.0002) between weeks from peak index of cough until slaughter and the percentage of pigs with Myco-plasma-like lesions at slaughter. Hence, a high number of M hyo antibody positive pigs results in a higher prevalence of lesions, but if coughing occurs early in the finishing period, the lesions heal off before slaughter.

The intensity of coughing as measured by CI has a significant correlation to lung tissue scars at slaughter, shown by a significant correlation (P=0.043) between peak index of cough during the finishing period and the percentage of pigs with lung tissue scars.

For pleurisy lesions, there was significant correlation (P=0.012) between time lapsed from peak levels of PCV2 until slaughter and the percentage of pigs with pleurisy at slaughter. Furthermore, there was a significant correlation (P=0.029) between weeks from peak index of cough until slaughter and the percentage of pigs with pleurisy at slaughter.

Conclusions and Discussion

Post mortem examinations are a valuable tool for gathering information on the respiratory health status in herds, but do not provide sufficient information on which pathogens that are circulating in the herd. Oral fluids is an easy non-invasive and reliable tool for diagnosing viruses, however if you want to know if M hyo is present it is better to obtain blood samples or to examine a piece of lung by PCR.

It need to be kept in mind that this study was conducted in herds that were seropositive for M hyo, and that the results may be different when applied on farms that are seronegative.

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